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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,969

10/13/2005

Anton Arnold Van Der Heiden

1458-003

1664

32905

7590

04/14/2011

JONDLE & ASSOCIATES, P.C.

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EXAMINER

BUI, PHUONG T

ART UNIT

PAPER NUMBER

1638

NOTIFICATION DATE

DELIVERY MODE

04/14/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JondleOA@jondlelaw.com

## Office Action Summary

### Application No.

10/552,969

### Applicant(s)

VAN DER HEIDEN, ANTON  
ARNOLD

### Examiner

PHUONG BUI

### Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12, 14-21, 23-26, 29 and 31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12, 14-21, 23-26, 29 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. The Office acknowledges the receipt of Applicant's amendment filed February 4, 2011.

Claims 12, 14-21, 23-26, 29 and 31 are pending and are examined in the instant application.

All previous rejections not set forth below have been withdrawn.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This action is made FINAL.

#### ***Claim Rejections - 35 USC § 112, second paragraph***

2. Claims 12, 14-21, 23-26, 29 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 12(d), it is unclear whether "having two alleles with a deletion, rearrangement or mutation in the gene encoding the enzyme capsanthin-capsorubin synthase" refers to two recessive alleles, or two alleles whereby one of which contains the mutation. It is also unclear what happened to the *y* allele from 12(a), because it is not recited in 12(d). It is suggested 12(d) recites two recessive *y* alleles.

In claim 18, it is unclear from which plant the first recitation of "ripe fruit" refers to. Is Applicant referring to the "ripe green fruit" of claim 12? See also claim 23.

Claim 18 currently reads 1.5 times and 2.85 times of greater than 5.0g/kg fresh weight, which does not appear to be Applicant's intention. Similarly, claim 23 currently

reads 1.3 times and 1.73 times of greater than 2.0g/kg, which does not appear to be Applicant's intention. See also claim 29. It is suggested "greater than 5.0" and "greater than 2.0" in claim 12 be amended to include the limitations of claims 18 and 23, as set forth in claim 29. It should be noted upon incorporation of the limitations of claims 18 and 23 into claim 12, claim 12 will be a duplicate of claim 29.

In claim 18, it is suggested ", said plant" be deleted to clarify which plant contains the dominant *CL* allele. See also claims 23 and 29.

Clarification and/or correction are required.

***Claim Rejections - 35 USC § 112, first paragraph***

3. Claims 12, 14-21, 23-26, 29 and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant is invited to point to the page and line number in the originally filed specification where support for "intercrossing" can be found. The specification only provides support for selfing the F1 generation having the *Y/y, CL/c* phenotype (p. 6, ln. 29-31).

Claim 18 currently reads 1.5 times and 2.85 times of greater than 5.0g/kg fresh weight, which is at least 7.5g/kg and 14.25g/kg. Similarly, claim 23 currently reads 1.3 times and 1.73 times of greater than 2.0g/kg, which is at least 2.6g/kg and 3.46g/kg. Claim 29 recites both. These values are not supported by the originally-filed disclosure.

Absent of such support, Applicant is required to cancel the new matter in response to the instant Office action.

4. Claims 12, 14-18, 23 and 29 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the sucrose and ascorbic acid levels set forth in Tables 1 and 2, does not reasonably provide enablement for “greater than 5.0 grams per kilogram” and “greater than 2.0 grams per kilogram”, or “1.5 times and 2.85 times” and “1.3 times and 1.73 times” these g/kg values. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

As stated in the Office action of April 15, 2008, the breadth of “greater than 5.0 grams per kilogram” and “greater than 2.0 grams per kilogram” has no upper limit. The actual levels obtained are only slightly higher than those cited (see Tables 1 and 2). No guidance or working example is provided to show how higher sucrose or ascorbic acid levels can be achieved. It is unpredictable what additional manipulations are required to achieve the claimed levels, since the homozygous recessive alleles *y* and *cl* cannot produce plants having the claimed sucrose and ascorbic acid levels as commensurate in scope with the claims. Applicant has no working examples of sucrose and ascorbic acid levels at, for example, 7.5g/kg to 14.25g/kg in sucrose and 2.6g/kg to 3.46g/kg in ascorbic acid. Thus Applicant has not enabled the claimed levels as commensurate in scope with the claims, and one skilled in the art cannot make and use the claimed invention without undue experimentation.

***Claim Rejections - 35 USC § 102***

5. Claims 12, 14-21, 23-26, 29 and 31 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Smith, PG (J. Hered., Vol. 41, No. 5, May 1950, pp. 138-140) in light of Shifriss et al. (Euphytica, Vol. 60, 1992, pp. 123-126), Park et al. (Korean Journal of Plant Pathology, Vol. 5, Nol. 3, 1989, pp. 262-270) and Osuna-Garcia et al. (Journal of Agricultural and Food Chemistry, Vol. 46, Nol. 12, Dec 1998, pp. 5093-5096), all previously cited.

Smith teaches a method whereby a brown *Capsicum annuum* fruited plant designated "*R cl*" (Applicant's *Y/Y;cl/cl*) is crossed with a yellow *Capsicum annuum* fruited plant designated "*r Cl*" (Applicant's *y/y;CL/CL*). By simple Mendelian genetics, the F1 generation is *Y/y;CL/cl*. The F2 generation is obtained by crossing two F1 plants: *Y/y;CL/cl* x *Y/y;CL/cl*. This cross gives a ratio of 9 red : 3 brown : to 3 yellow : 1 green (Table II). The 9:3:3:1 ratio obtained means one of the resulting plant from the cross is *y/y;cl/cl*. This plant is green even when ripe (Table II), same as in claim 1(d). Shifriss teaches the green pepper of Smith is designated Permagreen, and is genetically recessive at *y* and *cl* alleles, *yy cl/cl* (p. 126), which indicates the ripe green plant of the instant application has the same two homozygous recessive alleles as the plant of Smith. The specification states the capsanthin-capsorubin synthase gene is responsible for the trait Y involved in the synthesis of red carotenoid pigments in *Capsicum* fruits (p. 2 Ins. 17-24). Thus, if the "*y*" recessive allele of the instant application is due to a deletion, rearrangement or mutation in the enzyme capsanthin-capsorubin synthase, then the "*y*" of Smith is also due to a deletion, rearrangement or

Art Unit: 1638

mutation in the enzyme capsanthin-capsorubin synthase. Most commercial green peppers are non-mature when picked, and thus are not as sweet as mature red peppers (see specification, p. 3, Ins. 9-25). Since the pepper of Smith remains green when matured, or ripened, it inherently has higher sugar content than the immature green pepper, in light of Park. Park teaches ripened peppers have higher sugar (sucrose) content than immature peppers (Abstract). With regard to the ascorbic acid level, Osuna-Garcia teaches peppers increase in ascorbic acid content as they ripen (Abstract). Because the method steps of Smith are identical to those as claimed and resulted in a plant which has the same two homozygous recessive alleles as Applicant's, the green fruited plant of Smith is the same as that of the instant application. The fruit of Smith would inherently contain the sucrose and ascorbic acid levels recited in the claims. Accordingly, Smith teaches the claimed method for enhancing sucrose and ascorbic acid content in a *Capsicum* plant.

Applicant traverses primarily neither Smith nor Shiffriss teaches the sucrose or ascorbic acid content recited in the claims, Park teaches red fruit has higher sucrose content than green fruit, and Osuna-Garcia teaches the levels of ascorbic acid are influenced by the availability of light.

Applicant's traversals are unpersuasive because the method steps of Smith are identical to those set forth in the claims, and the resulting plant of Smith has the same recessive alleles *yy c/c* as the resulting plant in the claimed method. Therefore, the plant of Smith would by necessity have the same sucrose and ascorbic acid content as set forth in the claims. If the recited sucrose and ascorbic acid content of the instant

Art Unit: 1638

application is due to another gene combination, then said gene combination should be recited in the claims to differentiate the product of Smith from that of the claimed invention. Shifriss, Park and Osuna-Garcia are cited to show inherency: Shifriss teaches the plant of Smith contains recessive alleles *yy clcl*, Park teaches ripe fruit has higher sucrose content than immature fruit, and Osuna-Garcia teaches ripe fruit has higher ascorbic acid content than immature fruit. Plant growth and fruit ripening are affected by many environmental factors, including the availability of light. Under the same growth conditions, the ripe *yy clcl* fruit of Smith would have the same ascorbic acid level and sucrose content as the ripe fruit of the instant application, absent evidence to the contrary.

6. Claims 12, 14-21, 23-26, 29 and 31 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shifriss et al. (Euphytica, Vol. 60, 1992, pp. 123-126) in light of Park et al. (Korean Journal of Plant Pathology, Vol. 5, Nol. 3, 1989, pp. 262-270) and Osuna-Garcia et al. (Journal of Agricultural and Food Chemistry, Vol. 46, Nol. 12, Dec 1998, pp. 5093-5096), all previously cited.

Shifriss teaches a cross between a brown fruited plant (*Y/Y;cl/cl*) with Permanent White (*y/y;CL/CL*). The white color is due to a genetic linkage with a third gene and is not relevant here. Crossing *Y/Y;cl/cl* x *y/y;CL/CL* would result in *Y/y;CL/cl* F1 plants. The results of the F2 cross *Y/y;CL/cl* x *Y/y;CL/cl* is shown in Table 2, population no. 11562, whereby one of the resulting F2 progeny is *y/y;cl/cl*. The *Y/y;CL/cl* denotes the F1 parents have a deletion, rearrangement or mutant in the enzyme capsanthin-



Art Unit: 1638

capsorubin synthase and a recessive *cl* allele. Accordingly, the F2 cross of *Y/y;CL/cl* x *Y/y;CL/cl* of Shifriss anticipates the claimed invention. Since the pepper of Shifriss stays green when mature (ripened), it would inherently have higher sucrose and ascorbic acid content than an immature green pepper. Park teaches peppers increase in sugar (sucrose) content as they ripen (Abstract). Osuna-Garcia teaches the ascorbic acid content also increases as the fruit ripens. Because the method step of Shifriss is identical to that as claimed and resulted in a plant which is encompassed by the claims, the plant of Shifriss would inherently contain the sucrose and ascorbic acid levels recited in the claims.

Applicant traverses primarily Shifriss does not teach the claimed sucrose and ascorbic acid levels, Park and Osuna-Garcia teach red peppers, and the ascorbic acid level of Osuna-Garcia is due to light availability.

Applicant's traversals are unpersuasive because Park and Osuna-Garcia are used to show inherency: the levels of sucrose and ascorbic acid are higher in ripened fruit than immature fruit. The ripened green fruit of Shifriss remains green due to the *yy cl/cl* homozygous recessive alleles. However, since it is ripened, it would inherently have the increased sucrose and ascorbic acid content the ripened fruits of Park and Osuna-Garcia. If the recited sucrose and ascorbic acid content of the instant application is due to another gene combination, then said gene combination should be recited in the claims to differentiate the product of Shifriss from that of the claimed invention. Plant growth and fruit ripening are affected by many environmental factors, including the availability of light. Under the same growth conditions, the ripe fruit of

Shifriss would have the same ascorbic acid level and sucrose content as the ripe fruit of the instant application, absent evidence to the contrary.

***Remarks***

7. No claim is allowed.
8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUONG BUI whose telephone number is (571)272-0793.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on 571-272-0975. The fax phone

Art Unit: 1638

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Phuong T. Bui/  
Primary Examiner, Art Unit 1638